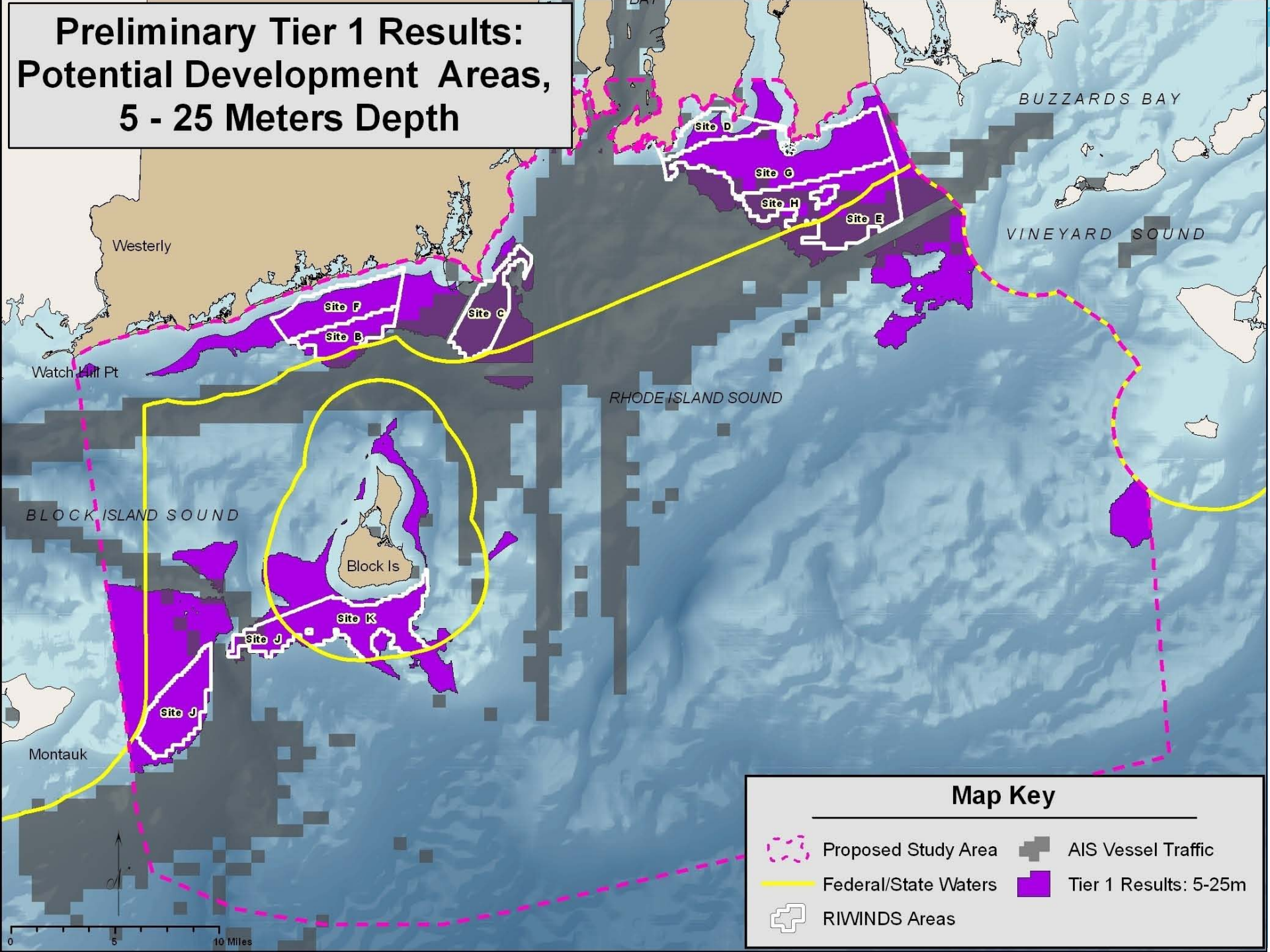


**Preliminary Tier 1 Results:
Potential Development Areas,
5 - 25 Meters Depth**



Technology Based Assessment

Objective: Develop a metric based on technical challenge to power production potential to screen for sites.

$$\text{TDI} = \text{TCI} / \text{PPP}$$

where TDI –Technical Development Index

TCI- Technical Challenge Index

PPP- Power Production Potential

Presented in form of dimensionless values (Predicted TDI divided by lowest TDI possible in area of interest)

Components of TDI

- PPP- Power Production Potential

$$PPP = W * CF$$

Where W- annual mean wind power at hub height of wind turbine (-80 m) (kW/m²) (Data from AWS TrueWinds)

CF- capacity factor (35 %)

Components of TDI

- TCI – Technical Challenge Index

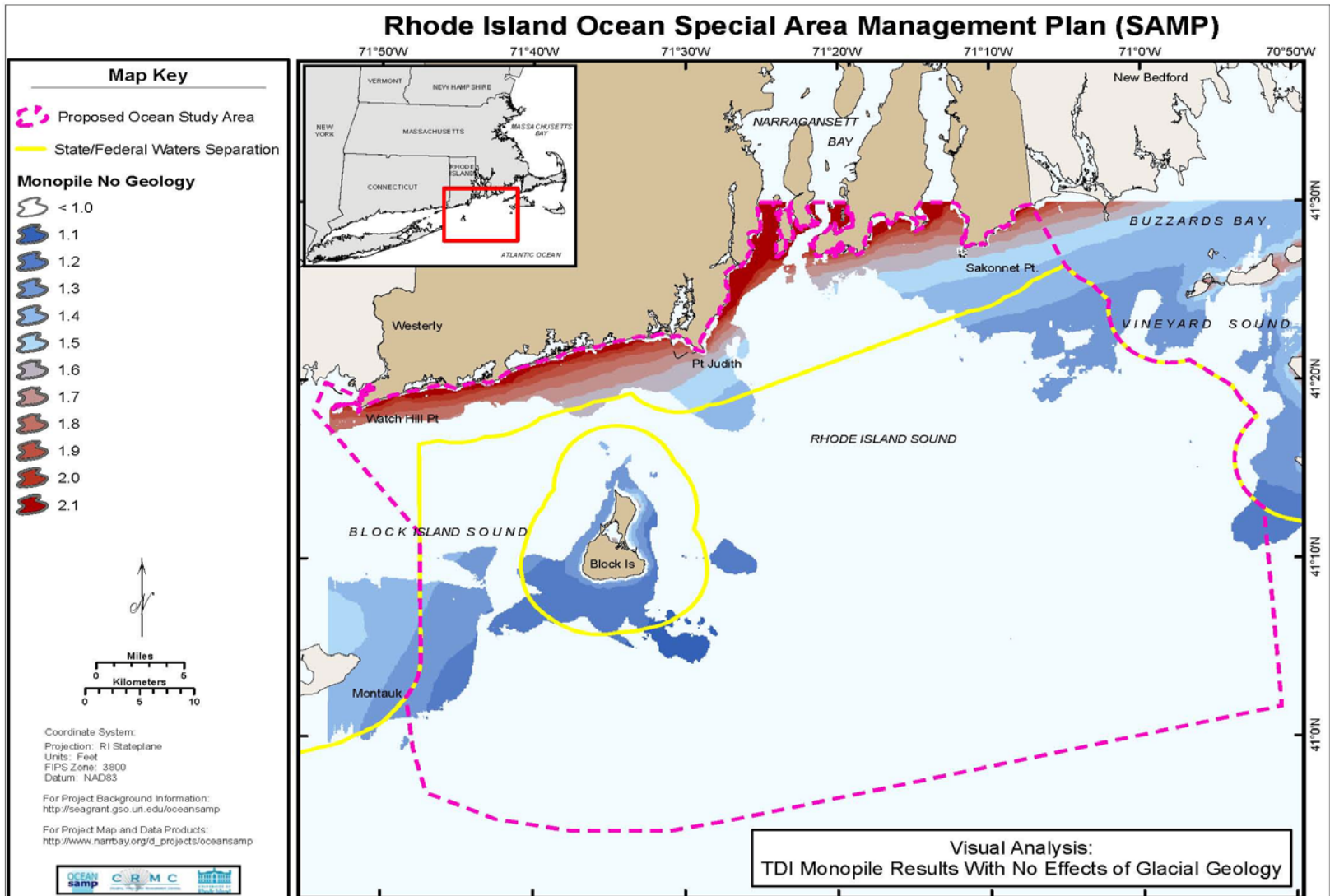
$$\text{TCI} = \text{TT} + \text{CD}$$

Where TT- Technology Type

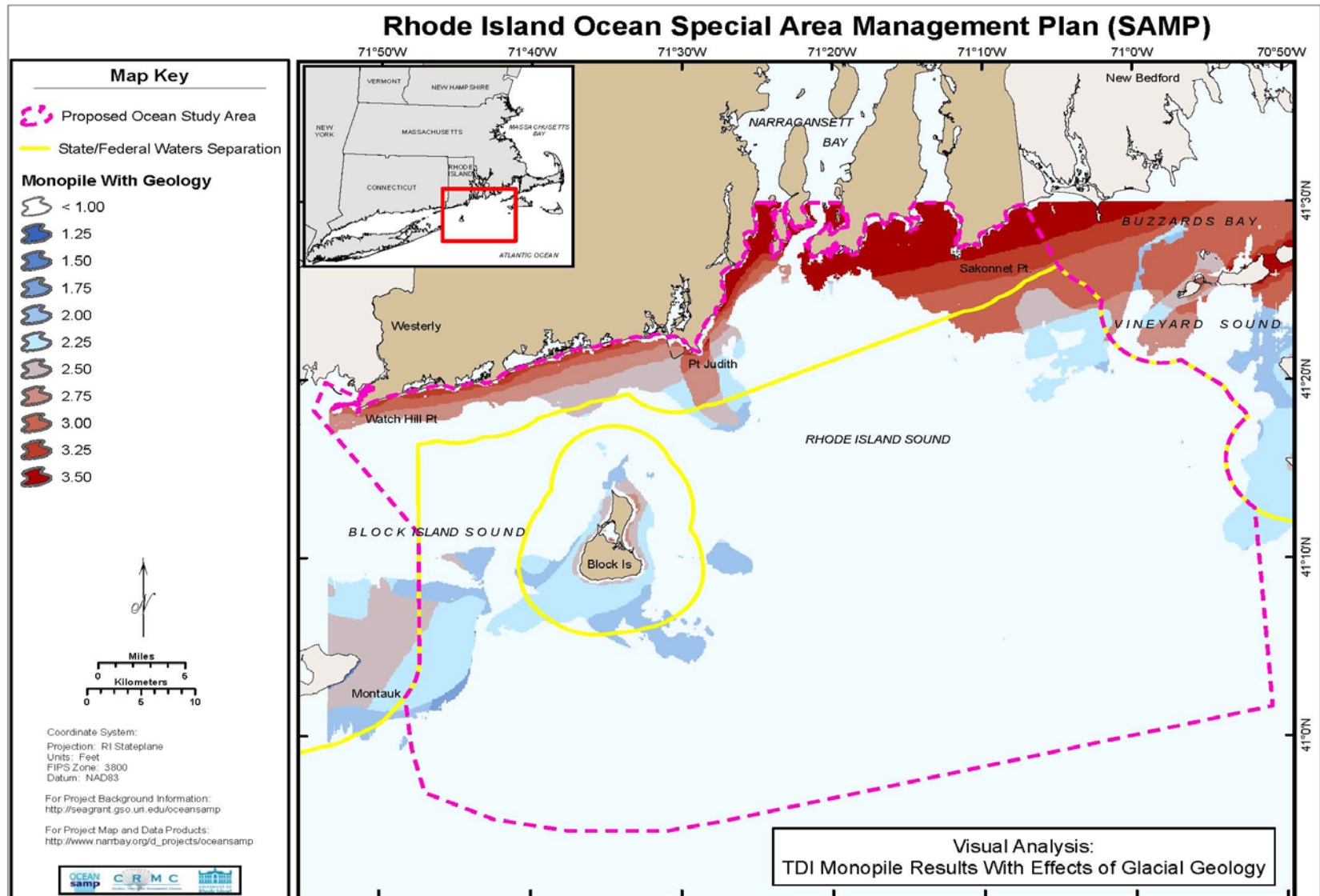
CD- pro-rated distance to nearest electrical grid
(distance to grid * SF/ number of turbines
in wind farm)

SF- scale factor that assesses technology
challenge for cable (nominal – 0.8)

TDI Shallow Water (0 -25m), no geology

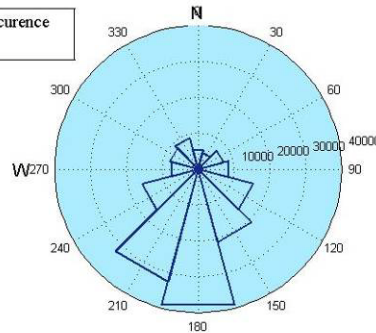


TDI Shallow Water (0-25m), with geology



Wave Rose and Wave Height Histogram, WIS 101

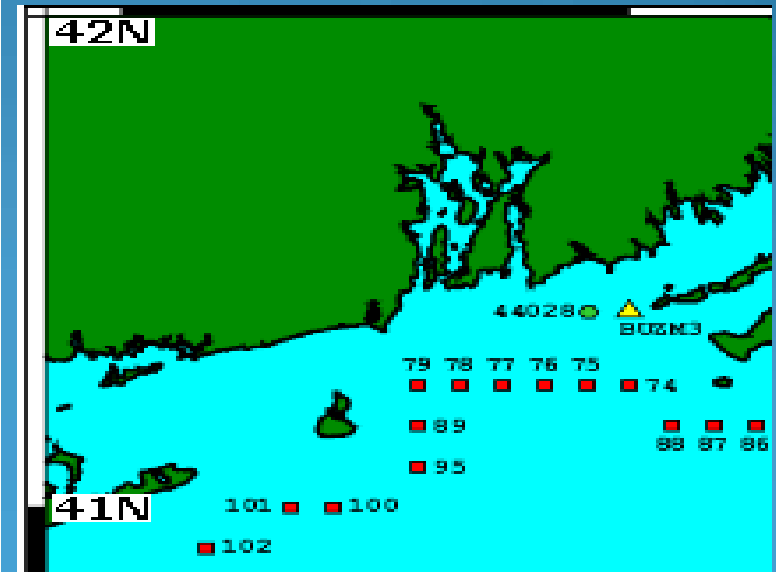
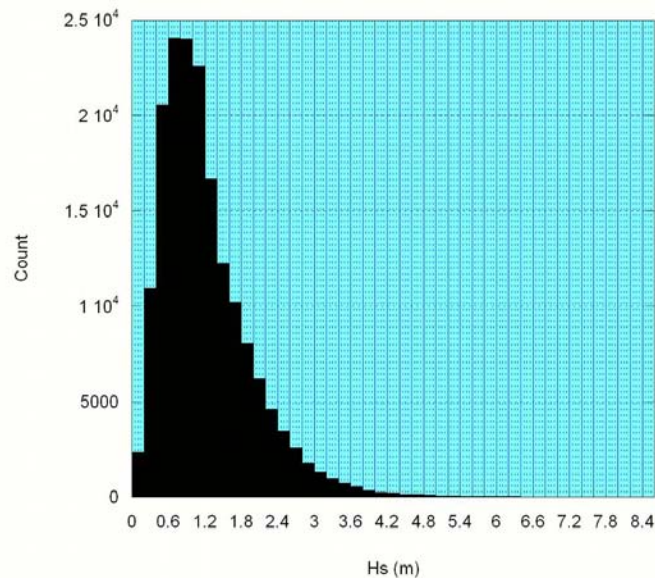
Station WIS 101 Wave mean direction frequency of occurrence over 20 years, 1980 to 1990



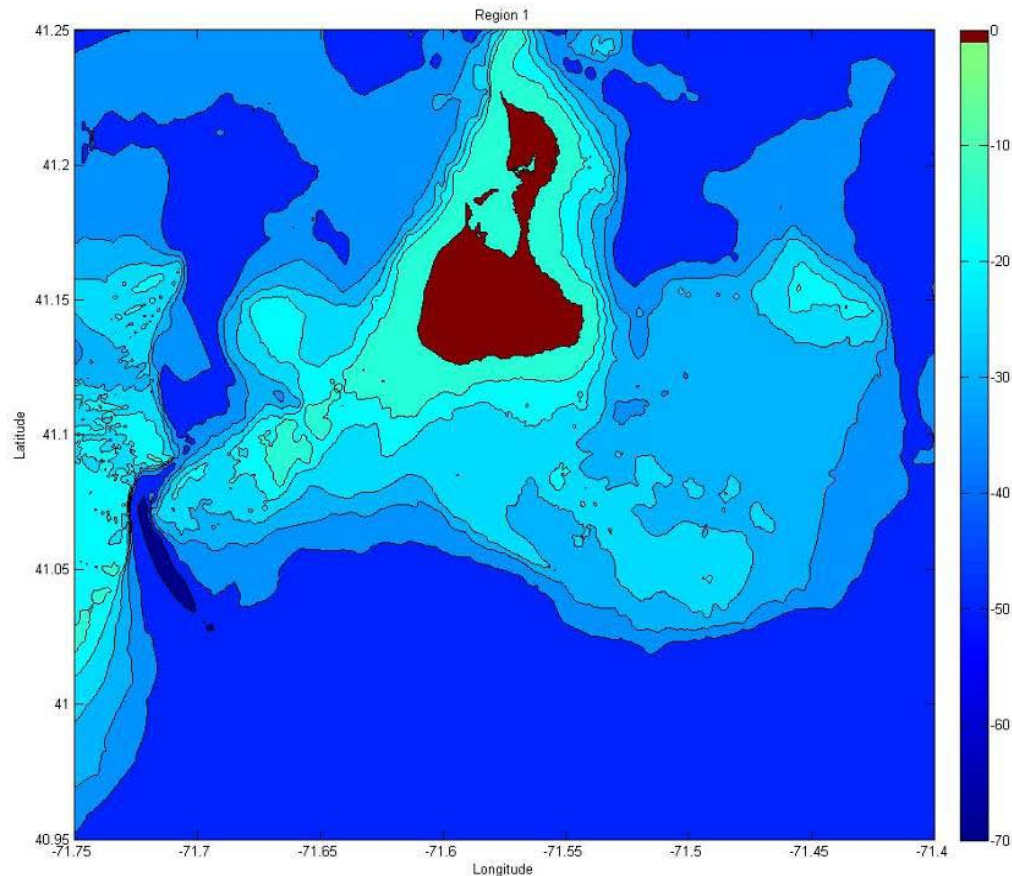
Waves
Primarily from
South and
Southwest

Significant Wave Height Probability Distribution

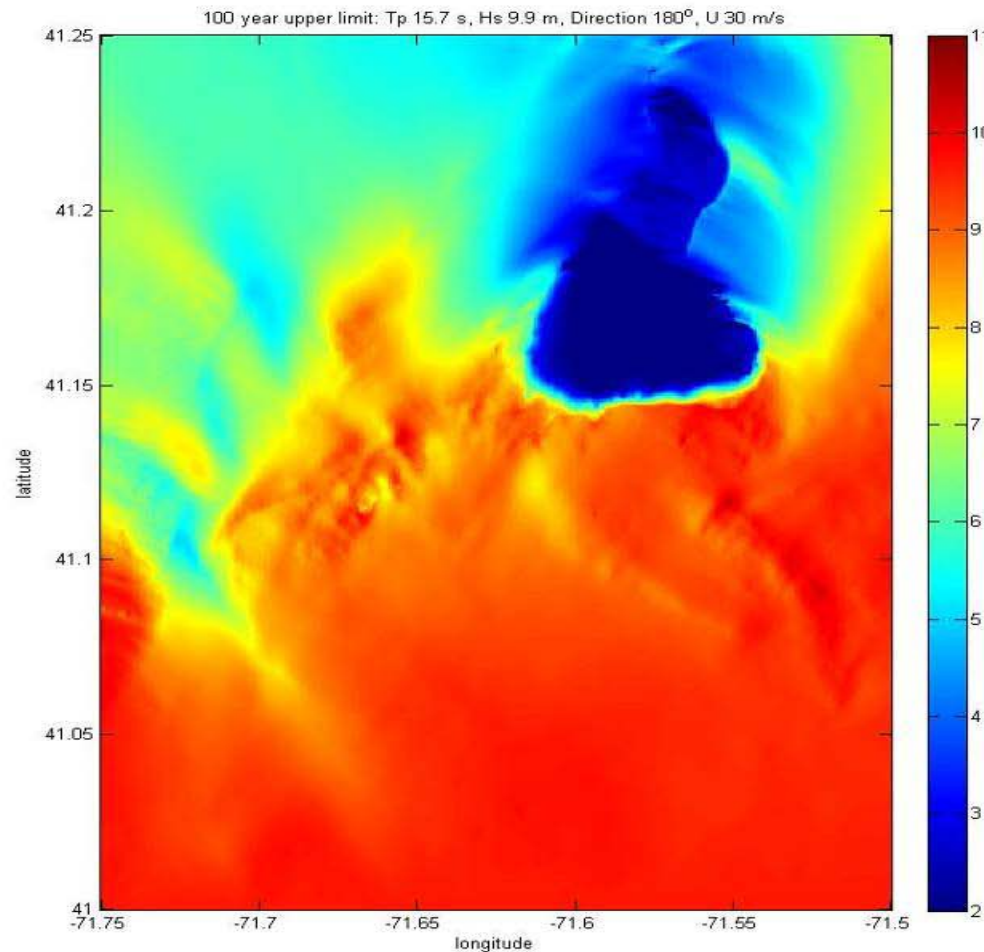
WIS data station 101 1980-1999



Bathymetry in vicinity of Block Island




WAVE Analysis, Return Period -100 yrs (upper 95% limit) $H_s=9.9$ m, $T_p=15.7$ sec, South



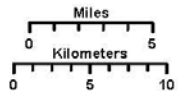
Rhode Island Ocean Special Area Management Plan (SAMP)

Map Key

 Proposed Ocean Study Area

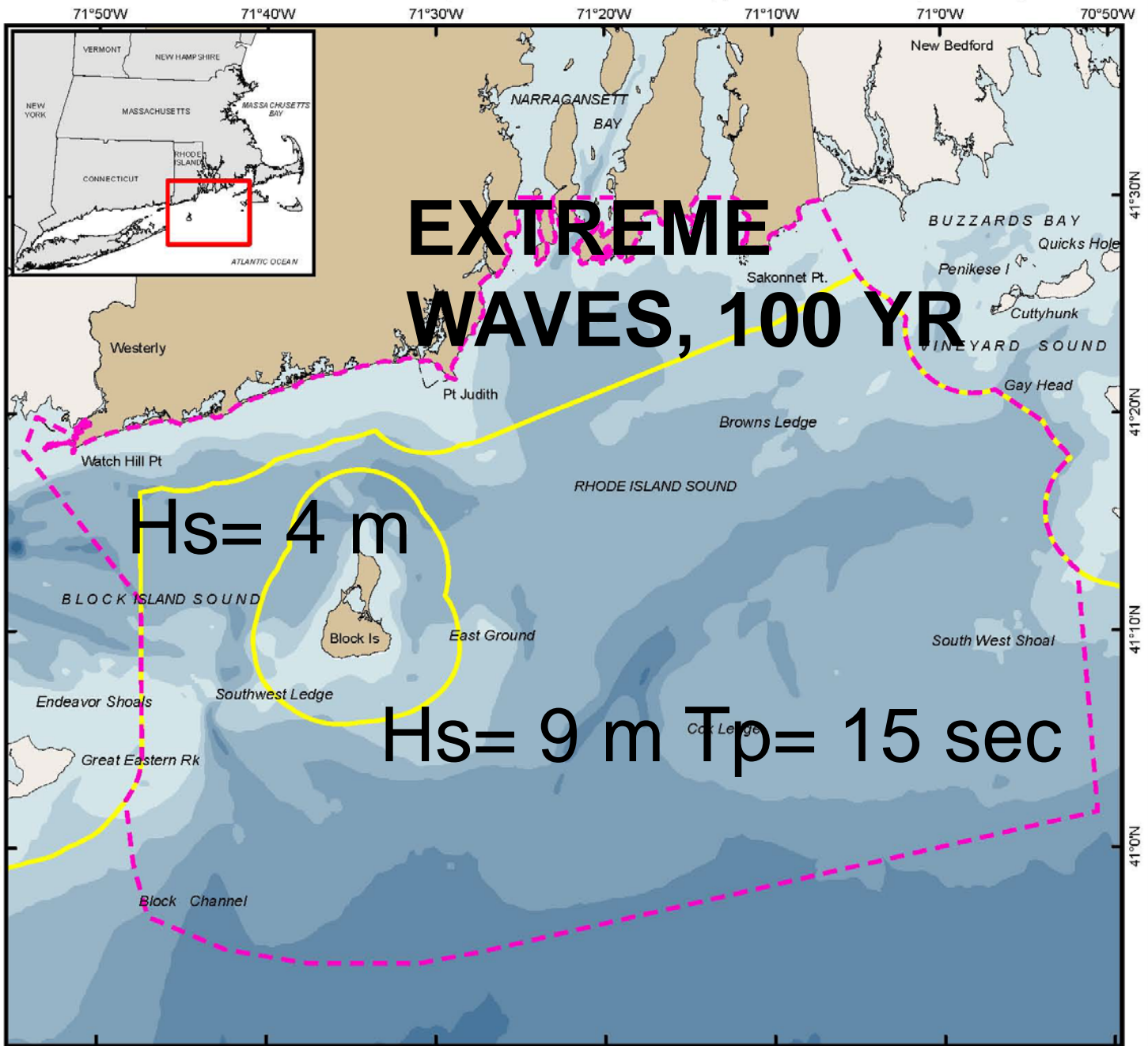
 State/Federal Waters Separation

Bathymetry (m)

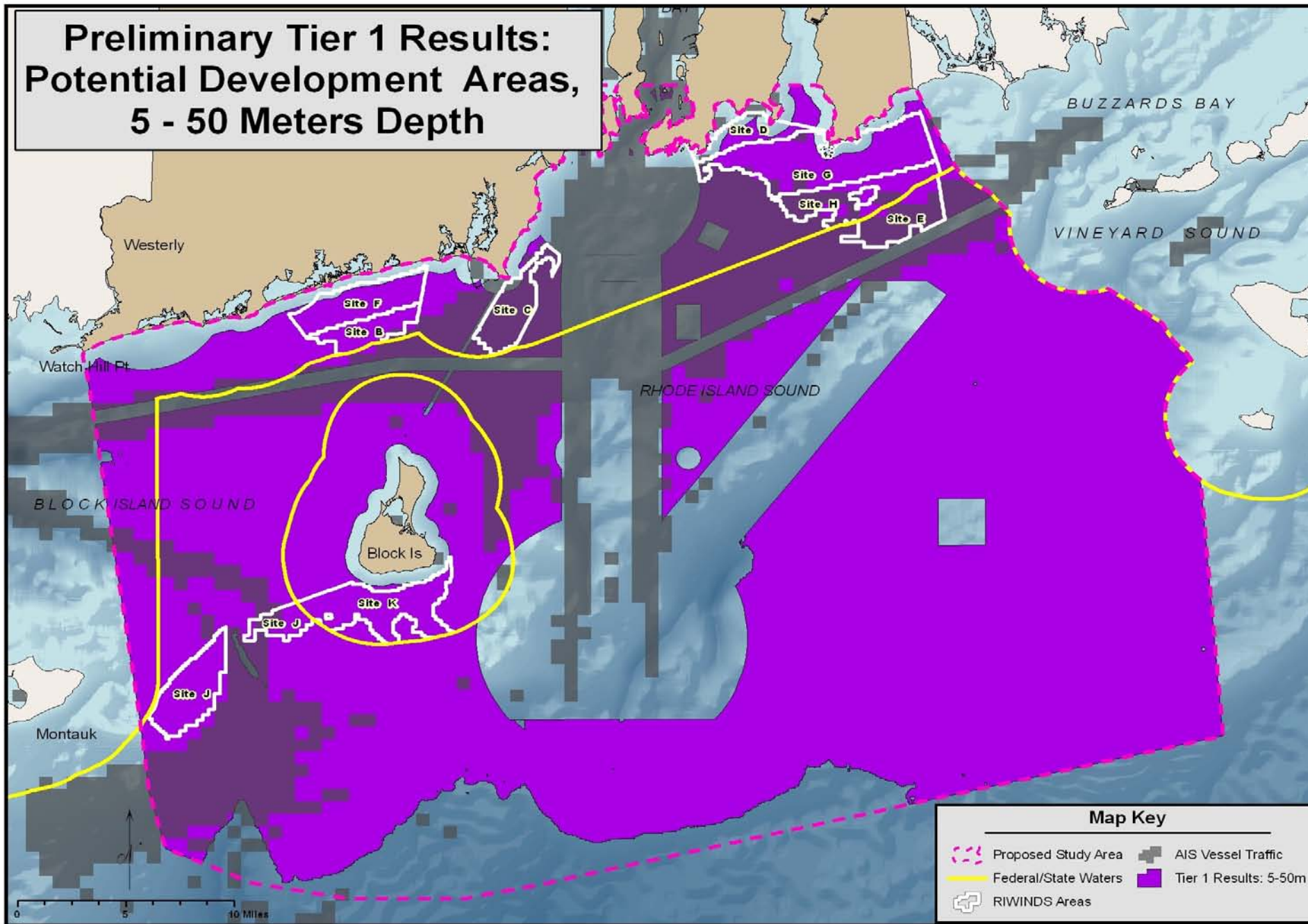


Coordinate System:
Projection: RI Stateplane
Units: Feet
FIPS Zone: 3800
Datum: NAD83

For Project Map and Data Products:
http://www.narrbay.org/d_projects/oceansamp



Preliminary Tier 1 Results: Potential Development Areas, 5 - 50 Meters Depth



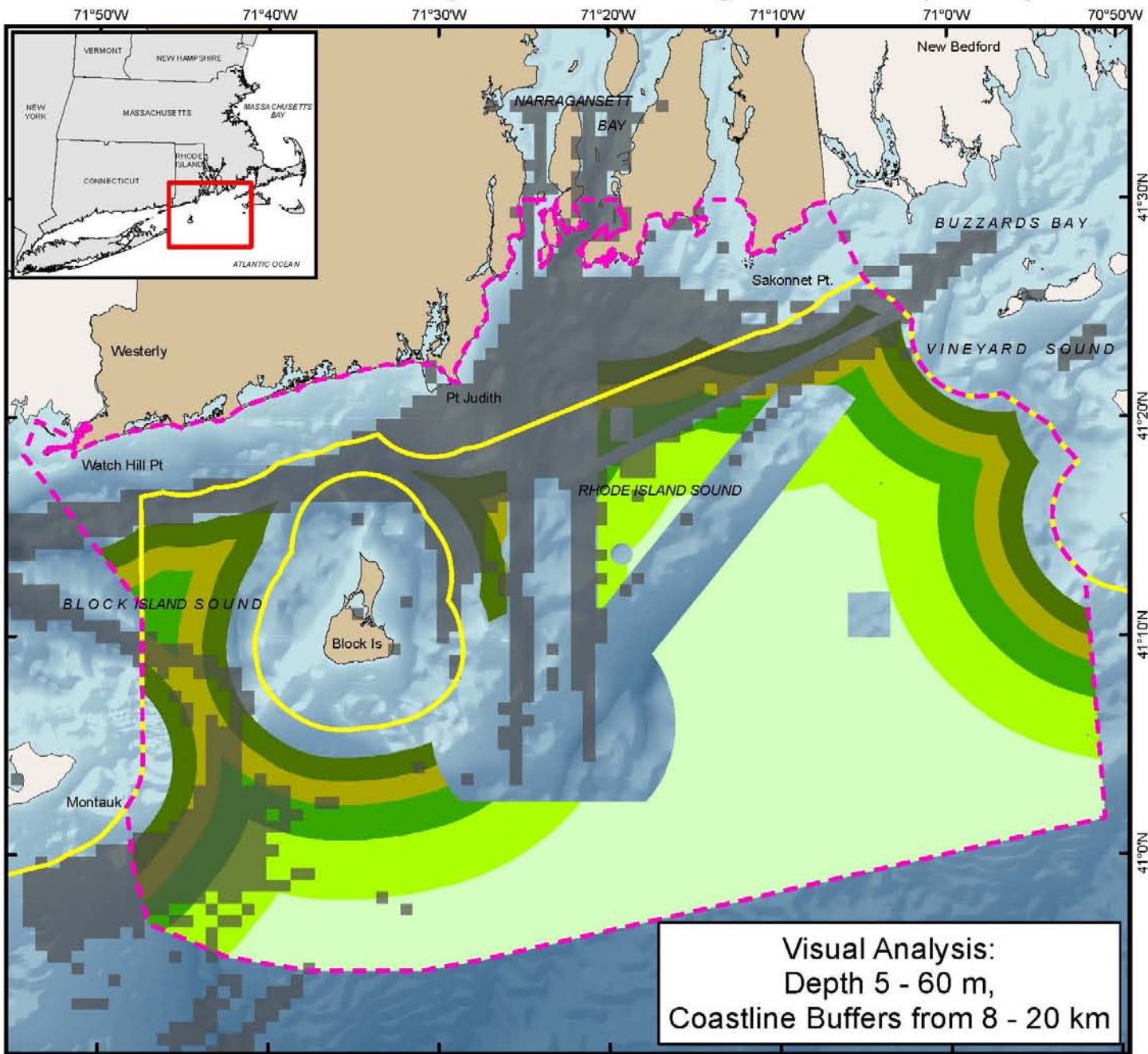
Approach to Identify Sites in Deep Water (25 to 60 m)

Visual Impacts
Technical Development Index
(Principal Component Analysis)
Marine Transportation

Visualization Assessment

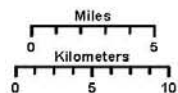
- One of principal reasons to move sites offshore is to minimize visual impacts
- Set back analysis (from any land body) performed
 - Set backs of 8, 10, 12, 15, and 20 km
 - 20 km (12 miles) limit of visualization
 - 10 -12 km(5-6 miles) set back for Cape Wind

Rhode Island Ocean Special Area Management Plan (SAMP)



Map Key

- Proposed Ocean Study Area
- State/Federal Waters Separation
- AIS Vessel Traffic
- 20 Kilometer Buffer
- 15 Kilometer Buffer
- 12 Kilometer Buffer
- 10 Kilometer Buffer
- 8 Kilometer Buffer



Coordinate System:

Projection: RI Stateplane

Units: Feet

FIPS Zone: 3800

Datum: NAD83

For Project Background Information:
<http://seagrant.gso.un.edu/oceansamp>

For Project Map and Data Products:
http://www.narrbay.org/d_projects/oceansamp



Visual Analysis:
 Depth 5 - 60 m,
 Coastline Buffers from 8 - 20 km